

Fourth Report on the Tenasserim Provinces considered as a resort for Europeans.—By JOHN WILLIAM HELFER, M.D.

England has nearly acquired that full amount of improvement and civilization which its situation, as respects foreign countries in Europe, which its climate, its soil, will ever allow it to acquire.

Scotland and Ireland are still capable of great improvement; however, in the former climate renders success precarious; in the other, moral reasons obstruct amelioration.

England would scarcely advance, when confined to England; nay, it would be obliged to retrograde. That which renders England powerful, and continues to increase its riches and prosperity, is its universal commerce, and its transatlantic colonization.

England, of all countries, knew at all times the best to appreciate the value of colonies. All its colonies advance rapidly, and new ones continue to be established. The East Indies, finally, have also been opened to the mass of the British nation, and these immense territories afford a field of such importance, that its vast consequences cannot yet be appreciated at the present day.

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Adventurers are always attracted by the hopes of sudden gain, and the fables of India's immense riches, are yet vivid in the imagination of the multitude. As the Spaniards flocking to America in search of the Eldorado, when disappointed turned agriculturists; so when the East Indian adventurers find out the errors of their hopes and fancies, they will become sober colonists; for prospects there are certainly open to them, not to become suddenly rich, but gradually wealthy.

It has frequently been stated that Europeans are not fit to become tropical colonists. If this were the case, no colony would have been established in the West Indies, much less would any have become flourishing. Certainly they are not able to bear the climate as day labourers, at least not the greater part, however they can become landed proprietors, superintending their farms, and carrying on cultivation by the labour of other people.

There is much difference between tropical colonies and colonies in the temperate zone; both sets have their particular advantages, and disadvantages. Tropical colonies can only be established by men who are wealthy, or who possess moderate capital to begin with. They employ either the natives of the country in which they settle, or they import foreign labourers. * * *

As the stream of European enterprise will turn towards India, it is necessary to direct it into the most safe channel, and the following paragraphs are written for the purpose of pointing out the different very great advantages which the provinces of Tenasserim possess, containing all that is requisite to transform them into an European tropical colony able to prosper in an eminent degree.

In every colony the new comer finds the country either a waste or occupied; and if occupied, it is occupied either by temporary tenants, or a fixed population.

Temporary tenants do not make use of the ground permanently; they are tribes of hunters, or graziers, or people who resort to certain places for the sake of a particular spontaneous production fit for their own use, or for exchange.

A fixed population makes use of the ground as the source of their livelihood.

The Tenasserim Provinces contain all these divisions combined. A great, and the greatest portion is a waste; part of it is used on account of its teak forests, or sapan-wood jungles, or wood-oil trees; other parts are resorted to exclusively on account of a productive fishery; others, on account of the rocks producing edible birds' nests; the smallest part of it is occupied by permanent dwellers, engaged in cultivating the ground.

I. The first great advantage which the Tenasserim Provinces offers, is *the abundance of lands of every description.*

An obstacle which has been found in most of such uncivilized countries is, that the inhabitants come very soon into collision with the new comers.

This can happen only in countries like America, where the population subsisted upon the produce of the chase.

In Tenasserim this would not be the case, for no part

of the population is employed exclusively with hunting, except a few Siamese, who pursue the elephant and rhinoceros, for the sake of the tusk, and rhinoceros' horns. The new comers therefore could only come in collision with the permanent dweller, that is, the planter.

Four-fifths of the native planters confine themselves to the production of rice, which is their chief alimentary subsistence.

The new comer would scarcely begin with this mode of cultivation, but would turn his attention to other articles which are more valuable, and procure his rice from the natives.

The existence of this population of husbandmen is an advantage to emigrants, because they furnish them with food; and it is an advantage to the natives, who find an increased consumption in the emigrant. Another obstacle occurring in countries already occupied, is the spirit of envy and enmity with which the native population is inspired towards the new comers. This spirit of enmity is to be derived either from the principle of self-preservation, or it is founded on religious prejudice, and national aversion.

If we judge from experience and inference, nothing is to be apprehended from the natives of these provinces in this respect.

The Chinese wherever they settled in the provinces, though they over-reached the Burmese in every respect, in a short time were always welcomed and encouraged by them.

They have no more dislike or aversion to European settlers than to the Chinese. Their religion is eminently tolerant; and as for national prejudices, they are far from disliking the Europeans, whom they consider rather to be a variety of the human species of a higher order.

II. The first aim of a colony is to give sustenance to an increasing number of people; as culture and produce increase, a surplus is gained, and the next step will be the endeavour to exchange the surplus for other commodities.

The Tenasserim Provinces are eminently well situated for commerce; their extent of sea-coast amounts to 600 miles; the formation of the country is that of a narrow strip of inland, from which descend numerous navigable rivers, keeping it connected

with the sea coast, and presenting *the greatest facilities for communication*.

III. The next advantage which these countries possess over all parts of India Proper—an advantage of the greatest importance to European settlers—is *the great salubrity of the climate*, which is so remarkable, that the provinces are considered by persons who have had opportunities of comparing the different climates of America, to belong to the most healthy for the European constitution of all known tropical countries. To be convinced of this truth, it is only necessary to compare the bills of mortality kept by the medical gentlemen of the European British corps, stationed at Maulmain and its dependencies, which prove that the rate of mortality scarcely ever exceeds, and is sometimes less than it would be under similar circumstances in Europe.

To account satisfactorily for this phenomenon is very difficult, when we see the countries almost bordering upon the provinces are counted amongst the most fatal of India; Arracan in particular, where the general appearance and form of the country, as well as the nature of its productions, are said to be similar to Tenasserim.

No other reason can be found, than that the country is either part of a narrow peninsula, or immediately adjacent; and that the extensive seas on both sides produce a constant, though not always perceptible current of air, and consequent ventilation, by which the rising obnoxious vapours of fermenting vegetable matter, and other elements of malaria, are either destroyed or carried away.

It is certain that the Arracan fevers are scarcely known; that liver complaints are of rarer occurrence; and pneumonic diseases scarcely known. It may be even asserted that Europeans of temperate habits, chiefly those not addicted to strong liquors, enjoy a greater health than natives; especially native children suffering from the small pox, which occurs epidemically at intervals, and carries away at times considerable numbers, much more, because all the endeavours of medical gentlemen to introduce vaccination have hitherto proved fruitless, some isolated cases excepted.

Preservation of health, besides, does not require here those particular precautions so necessary in India.

Bad effects from exposure are of very rare occurrence, as sporting gentlemen have ample leisure to experience, and this would certainly be of immense advantage to a planter, whose chief occupations are in the fields.

The coolness of the nights almost throughout the year, much contributes to restore vigour and health to a constitution which by constant perspiration during the heat of the day in the dry season, is partially exhausted.

The dangers from wild animals, snakes, and other venomous reptiles, are generally much exaggerated in Europe, if not altogether fabulous. In Tenasserim very little is to be apprehended from these animals.

There are tigers, and pretty numerous too, in the country, but they are of quite a different nature from those in Bengal, and probably more afraid of men than men of them. Accidents very seldom happen to natives, who penetrate daily into untrodden jungles, sometimes quite alone. No other quadruped else is to be feared; a planter may reside his whole life-time in the country without even having an opportunity of seeing a wild elephant or a rhinoceros. Dangerous snakes are very rarely met with, and I dare say less fatal accidents happen here than in the south of Europe.

IV. *The fertility* of a country is of a double nature—essential and accidental. The essential fertility is dependent upon the nature of the soil; the accidental, on the quantity of fertilizing matter found upon the surface, constituting a mould of humus. To determine properly the fertility of the Tenasserim provinces, we must retrace our steps to geological principles, and examine the different formations. A great portion of the surface in the interior is composed of primitive rocks, chiefly granite; great parts of the mountains, running parallel from north to south through the peninsula are granite or gneiss. The ridges are divided by valleys of an inconsiderable depth. The mountains themselves are scarcely ever very abruptly precipitous, generally rounded near the tops, without being lacerated. Almost every where, at least to some inches in depth, the sur-

face is decomposed, and throughout covered with lofty vegetation; a bare rock is one of the greatest rarities on the main land. The felspar decomposes exceedingly quick in tropical humid countries, and is found, contrary to the theory of celebrated chemists, one of the most fertilizing substances within the tropics; the reason is probably that the caustic of potassa or soda, which forms part of the elements of felspar, is neutralized by the abundance of humic acid produced by the immense quantity of decaying vegetable matter.

Hence we see that the valleys between the granitic ridges of the country into which all the decomposed particles are uninterruptedly swept from the sides of the mountains, together with the numerous decayed vegetable substances, belong to the richest soils of this country. Just this part of the country, chiefly inland, is uninhabited, or only employed by isolated Kareans. Not an inconsiderable portion of the surface of the provinces belong to the transition formations. They are much more abundant in the northern and middle, than in the southern parts. These are to be divided into the schistous and calcareous surfaces.

A great part of the country to the south of Maulmain and to the south of Ye, towards Tavoy, present argillaceous transition schist. This is that part of the country which is the most sterile of all; a more stunted vegetation is immediately observed, and great part of this tract instead of presenting lofty forests, is covered with bamboo. The chief reason of this sterility may be accounted for, by the deficient and but slow decomposition of the schists, and by the absence of sandy particles, and by the great absorption of water and moisture.

The province of Amherst possesses remarkable isolated rocks, or ridges of some extent, composed of mountain limestone.

The plains at the base of these abrupt mountains are remarkably fertile.

The mountains themselves, however, rising sometimes perpendicularly, full of chasms, without any level ground, will be found in every respect unavailable for cultivation.

Secondary formations, and amongst those the secondary sandstones (*Gres bigarre*) with puddingstones, cover the surface.

They are mostly to be found in the southern parts of province Amherst and in Ye province.

These tracts of land will be found but indifferently fertile, and the reason is their aridity, the water being absorbed with avidity by the porous puddingstones; meanwhile the argillaceous parts which enter into the composition form a hard crust, impenetrable to water. Though numerous, these districts never cover a great surface!

Part of the plains of the provinces belong to the tertiary formation; such are the higher parts of Amherst and Ye province, the plains of Tavoy and Kallee-oung, the plains between Tavoy and Polon, such the valley of Taun-biauk and the elevated land of Meta-mio, such the plain country on the Tenasserim river above the site of the old town, which is an argillaceous marly deposit of great extent. All these enumerated places are fertile, scarcely any are exclusively sandy, none, as much as I am aware of, gypsous.

To the postdiluvian formations belong the deltas of the rivers, which are, when above the influence of the salt water, highly fertile; if however so low as to be exposed to the influence of the salt water, entirely unproductive. To the first belong the low lands on the confluence of the Salween, the Gain, and the At-taran rivers, the small delta of the Ye river, and others of minor note between Tavoy and Mergui; to the latter belong all the mangrove districts, which are entirely unfit for cultivation. The great source of fertility in the country, independent of the fertilizing elements of the ground, is the quantity of the humus, or decayed vegetable matter, which has accumulated through tens of centuries. It is only necessary to represent that the whole country is an uninterrupted forest, the greatest part never cut. This constitutes the productiveness of virgin soils. We can safely pronounce that the greater part of the 30,000 square miles of which the provinces are composed, are fertile, or fit to be made fertile; and that only the higher parts of the mountains and the mangrove territories are sterile; the quantity of unproductive sterile, or unavailable lands, is scarcely one-fourth of the area.

Which part of the province may be the most fertile, is as yet undecided, as so little land is cleared. The northern parts will have the preference as rice countries, on account of the great plains; as the southern parts will be found preferable for perennial cultivation, on account of their approaching more in climate to the equatorial regions. The complaints of natural barrenness of soil, and inaptitude for cultivation said to exist in the Malay archipelago, and so much complained of by Marsden with reference to a great portion of Sumatra, is not applicable to Tenasserim.

V. *The great choice of lands* to be had, forms another great advantage in a beginning colony.

There are as yet no conditions laid down by government under which lands are given to private individuals, probably on account of no body having yet asked for land. Probably the same, or similar regulations will be fixed upon, which exist at present in the Straits of Malacca.

It should then be remembered, that the cultivation will probably take a different turn from that in India, viz. that very few annual, but mostly perennial plantations will be reared, such as of spices, coffee, betel-nuts, &c. and that short leases would be detrimental to the landholder.

The price of land where so much is lying waste, and where it should be the interest of government to keep as much as possible of the land occupied, will probably be insignificant in the beginning. Under the present system, borrowed from the ancient Burmese, every part of land occupied or not is the property of government, the natives merely farm it, and pay for the productions raised upon it nominally 25 per cent ad valorem.

VI. *The greatest variety of articles which can be raised in Tenasserim* is another great advantage which the provinces offer; not only every tropical production thrives well, but also exclusively intertropical articles promise to succeed in the southern parts of Tenasserim, and amongst those, some of the most valuable known, which are confined comparatively to a narrow sphere, such as nutmegs and cloves.

VII. *The combination of agricultural with mercantile pursuits* forms an additional reason to select this part of India in preference to many others. I mean, a planter can combine the sale of valuable spontaneous productions of nature which surround, with his chief pursuits in agriculture.

As the greater part of valuable productions can only be obtained from plants which require several years' growth before they arrive at maturity, the time which intervenes is lost to the planter in expectations, and can be turned to account by converting into practical use the following productions, which to this day are unused, though of intrinsic value, viz.—sticklac, the gamboge, the caoutchouc, the different gum resins, the wood oil, the black varnish, the aloes, and sandal woods, the native dyes, and several tanning substances, &c. &c.

VIII. The last advantage which the provinces offer as a colony, consists in *the facility of getting good labourers*; though the country is thinly peopled, and the Burmese on account of their independence and want of skill will never be extensively used as labourers, yet the Chinese can be brought into the country; it would only be necessary to direct the tide of their emigration from Singapore here, and certainly if Chinese once knew that they could find remunerating employment they would flock of themselves to these shores.

This is a matter of vital importance just at present, when the effects of the emancipation of negro slaves has involved the greatest part of the tropical colonies in embarrassments which threaten some of them with ruin. The advantages of having an European colony would be briefly the following:—

1. It would be the best means of rendering the country in the shortest possible time remunerating. Until now it has been a loss, and though it has made a gradual progress towards the better, yet it will be a considerable time before the native population augments sufficiently to render the country a source of revenue to government. It must besides be kept in mind, that should circumstances ever allow of settled government in Pegu, the greater part of the population in the north will emigrate from Tenasserim and return to their old homes, where they will have protection.

2. European settlers would soon call into practical use the manifold resources of the country.

3. United with the mother country by mutual interest, England would very soon gain by a new commerce with a new country, and by it be benefited.

4. When grown up to a greater community, an European colony would be considered as a safe position against millions of people inhabiting India. Of the different articles which are found in the provinces, or which can be raised, I have treated in my previous reports, I therefore confine myself to mentioning some of those which promise to become of the first importance to European settlers.

Spices.—Spice cultivation is excluded from India Proper; all attempts to transplant trees from the Malay archipelago have not answered the expectations. When the fruit ripens it is imperfect.

The nobler spices seem to be confined to a narrow sphere in interequatorial climes, confined to countries which are not far distant from their native place, the Moluccas.

It is only lately that the spice plantations in Penang (begun under apparently unfavourable auspices) realized the most sanguine expectations of success. They are already, and will be more in time, the true source of prosperity of that small colonial settlement.

Penang has a great resemblance in productions and climate to the southern portions of the Tenasserim Provinces. It may reasonably be conjectured that almost all valuable productions succeeding there will thrive in the Mergui Province. All that hitherto have been tried, have succeeded. Young nutmeg trees are growing in Mergui very well; they are not however sufficiently grown up to know by experience whether they will be equally productive.

There is a practical adage amongst the natives, which I am inclined much to credit, that where mangosteens thrive, nutmegs will grow and bear fruit.

Mangosteens are equally obstinate regarding locality. They do not grow well in India, and produce but indifferent fruit in Ceylon and the southernmost parts of the Peninsula. They

do not grow better in the northern parts of Tenasserim; Mergui is the northernmost limit where they attain perfection, and so it probably will be with nutmegs. Should nutmegs bear amply in Tenasserim, their introduction and multiplication will be of the greatest advantage, as no branch of tropical cultivation is as yet known giving such an ample return as nutmegs.

It is probable that the high prices of nutmegs will diminish with the increase of the number of plantations, but even half of the present price would be a very ample return. It is rather doubtful whether clove trees will succeed in Tenasserim; they grow but slowly, and are very delicate. There is only one tree which has blossomed this year, for the first time, in Mergui Province.

Coffee plantations are a branch of tropical agriculture which is particularly well suited for every part of the Tenasserim Provinces. Experience has taught, that coffee plants produce amply, and that the coffee obtained is of a superior quality. Some reared by Major MacFarquhar in Tavoy can be compared with the second best in Java. The young trees begin to bear in the third year, and are in full bearing after five years. The virgin soil if cleared, and burnt down forests in valleys on the sloping sides of mountains, are the best suited for its growth. Such an article of the first importance in the European market, does not want a particular recommendation.

Areca palm plantations are also of importance to the European planter in the southern parts of Tenasserim, where they attain high perfection. They give certain returns, which are not inconsiderable; they require however seven years' growth before they produce fruit.

The natives have only since the British occupation laid out areca plantations on a large scale. The provinces do not yet produce sufficient for the consumption of the country, and the nut is imported from Sumatra, and Penang.

Should arecas, as lately they have begun, be continued to be transported to Europe for the purpose of superseding oak bark and sumach for tanning purposes, the importance of areca plantations would greatly increase.

Cocoanuts.—In all tropical countries, having a large extent of

sea-coast, cocoanut plantations are chiefly remunerating if the native population is accustomed to use these nuts as a part of their diet.

To the European settler they are important, for the sake of manufacturing the oil for exportation to Europe. The country immediately bordering on the sea-shore is that best adapted for cocoanuts, because they require to be somewhat under the influence of salt water to thrive properly, and it is a part of the country otherwise unavailable. The borders of the mangrove jungles can be profitably employed in this way.

Nipah cultivation, though never as yet carried on by Europeans, seems to call for particular attention. The leaves of this palm are used for thatching common houses, when converted into a kind of thatch the price is generally from two to three rupees per thousand. But what merits particular attention, is the making of sugar from Nipah toddy or palm wine. Experiments have shown that the quantity of sugar is greater in proportion to that obtained from sugarcane. The chief difficulty arises from the rapid fermentation which the palm wine undergoes.

Nipah grows only near the sea-shore, in places which are under the influence of the tides; boats therefore can approach within a short distance of the plantation. It would be necessary to have a copper boiler on board of one of the boats, and to boil the just collected juice to prevent the vinous fermentation. In this way a great quantity of sugar could be obtained, which could be disposed of with considerable profit at low prices.

These are the chief perennial plantations which would be the most profitable to European settlers.

Annual plantations are less remunerating, but the returns are quick, and the majority would probably begin with them, except men of capital, who can afford to wait.

Annual plantations however require in the beginning a greater outlay than perennial. We have shown that the country with few exceptions is an uninterrupted forest. It is not only necessary with annuals to clear the forests, but to prepare the ground more carefully, digging out the stumps and roots of trees, and rendering it fit for tillage.

Such thoroughly prepared grounds do not exist in the provinces except those destined for rice-plantations, and those being situated in low localities, are scarcely available for other annuals.

It must be ascertained by experience whether a plantation consisting exclusively of annuals would be remunerating to European settlers. It is doubtful whether Tenasserim in its infancy as a colony, will be able to compete with Hindoostan in this respect. If however any annual plantations on a large scale are to be established, then cotton must be counted among the first. To augment the quantity of new cotton in the British colonies, and to render the mother country independent of foreign supplies, ought to be considered a matter of deep concern.

The East Indian possessions are particularly well fitted for cotton growth. India is the mother country of cotton, yet the original plant is deteriorated throughout India, and the modes of cultivation not understood. In Tenasserim the indigenous cotton plant, or that in use, is still worse than the Indian. It has a short staple, want of smoothness, and a great cohesion to the seed. The greater part of the cotton is sown together with mountain rice, upon newly burnt ground. Four-fifths of all cotton grown are obtained in this manner, almost all being used for home consumption. Other cotton seeds have been introduced since the British occupation, but unfortunately Pernambuco cotton was selected and generally distributed. It proved a failure, as might be expected from an almost subalpine plant being transferred into subequatorial plains, and the failure of the experiments contributed to make the natives think that their own species was better.

Egyptian, Sea Island, and Seychelle cotton have been also introduced lately, but almost all the seeds obtained did not germinate. European settlers well versed in cotton growth would have an ample field for exertions, and it seems that the plains between Ye and Tavoy, and between Tavoy and Palauk, will be particularly fit for the introduction of Sea Island cotton, as that variety likes the atmosphere of the sea and a slightly subsaline soil. For the Georgia Upland plant, the interme-

diat valleys and slopes would furnish an apparently good locality. We have hitherto, however, no experience whatever of cotton growth with introduced superior qualities, and can therefore throw no light upon the probability of success with cotton.

Of the cultivation of the sugarcane I have spoken in my former reports, as well as of indigo and tobacco cultivation. All these articles grow well in these provinces; there are however no known data on which to base how far an extended well attended cultivation would be remunerating, as these articles have been only reared on a small scale for home consumption, and no care taken to replace deteriorated varieties.

In Hindoostan a great proportion of the land is already converted into fields which are actually under tillage, and the people cultivate indigo, tobacco, and sugarcane; in this case it seems advisable to unite perennial cultivation with annual.

The following is the sketch of a plantation upon an extensive scale, which seems to the writer to combine all desired profits from cultivation in Tenasserim, and which seems to indicate the most advantageous method under present circumstances, to be pursued for transforming the virgin forest into cultivated land. It is only applicable to the southern parts of Tenasserim, especially Mergui Province. The first operation is the selection of an appropriated locality with reference to soil and situation. The best soil for the purposes which I am about to indicate, is that which has a layer of humus of at least two or three inches depth, whose upper soil is the red clayish earth, intermixed with a moderate quantity of sand.

Localities where the upper surface is constituted of decomposed granite rocks will be found, on account of the fertilizing quantity of the decomposed felspar, highly advantageous. Should a more than ordinary admixture of calcareous substances happen, as is the case in localities where isolated limestone groups protrude, it will be still better, the vegetation in the neighbourhood of such localities being always distinguished by a particularly luxuriant appearance.

It ought also to be ascertained, whether there be a sufficient stratum of subsoil two or three feet thick, not rock.

Undulatory, slightly sloping hills, and of these chiefly the part near the bottom of the valley, will be the best situation.

Places must be avoided where the waters have not a natural outlet, otherwise they accumulate during the height of the monsoon; besides a noxious inundation, the plantations are liable to be carried away with the good earth; the formation of terraces, and the digging up of trenches and drains, would be for the first settlers a too expensive operation, where unlimited quantities of unoccupied land can be chosen in the first instance.

Particular care in the selection of the locality should be taken to establish the plantation not far from the sea coast, from a navigable river, or at least near a creek communicating with the sea, or river, there being no roads in the country, and the easy transport of the produce being a matter of importance.

Localities should be chosen where the forest is high. The more primitive woods are grown up, the more they possess of accumulated humus, and the less they have of underwood;—the more underwood, the less good the soil, and the greater the number of white-ants, the greatest enemies to a plantation in tropical countries.

After having selected the proper locality, the cutting down of the forest is the next operation. It can only be performed during the dry season, from November to April; trees cut down during the monsoon do not burn well, this is a fact of which it is difficult to account satisfactorily.

The great art in cutting consists in felling the trees in such a manner that they fall in heaps; when they are lighted they burn the more freely, for the greatest trouble does not consist in felling a forest, but in burning it.

A month before the setting in of the monsoon, the whole area cut down is burnt in one day; after this, the always considerable remainder of the branches and smaller trees is cut again, and brought on new heaps, which are repeatedly burnt down, until nothing remains but the bare large trunks, which are never consumed by the fire.

In future times, when wood will be more appreciated, part of these trunks, 30 or 40 feet in length, quite straight, some species yielding excellent timber for ship-building and other purposes, will probably be removed to well situated localities, where they can be dragged by elephants to the water's edge. For the present, there is no demand for timber, and these large trunks are left in the plantation to rot. The aspect of such a plantation cleared and prepared, is not agreeable to the eye of an European accustomed to see clean fields; the standing and strewed large trunks prevent the application of the plough, but in the present description the most profitable mode of plantation is kept in view, and this does not require the plough, for such a plantation is not to become a field, but a garden.

The next aim is to render the prepared soil as productive as a virgin soil can be made. It is not yet ascertained by experience whether it is not advisable to sow in the first instance mountain rice, not only on account of the produce obtained covering at least a great part of the expences of cutting down the forest, but also on account of being a powerful check to the shooting up of numerous weeds, after a few months, notwithstanding constant weeding. The natives affirm that the quantity of nutritive matter of which the rice deprives the soil, is less than that consumed by the weeds.

If rice is not planted, sesamum oil-seed is sown broad cast upon the ashes, young chilli plants planted in rows, and cut pieces of yams planted like potatoes at intervals.

These annual productions enter into the domestic economy of a tropical planter, and the surplus, if the country be inhabited, is bought up by the natives; the labourers also, in most cases, consent to take a part of their wages in kind, instead of money.

The next is the planting of plantain shoots. This plantation is formed on account of the shade which the broad leaves of this plant throws over the young perennial plants, shade being a most necessary requisite in the dry season, and plantains shooting out the quickest, without detaching much nourishment from the soil, and are besides otherwise useful.

They yield, as is well known, an astonishing quantity of

wholesome food. They are cut down after the perennial plantations attain the height of four feet six inches, when they are strong enough to bear the dry season unprotected, and the burnt plantains yield a considerable quantity of potash. At the same time that the forest is cleared and prepared, a nursery for young areca palms is to be established in some appropriate locality. The best arecas for seeds are to be obtained from December to March, and sufficient are at present grown in the southern provinces, so that seed is always procurable. Such as are the largest and apple shaped, are considered the best for planting. They are placed in baskets in layers, covered with leaves or hay, from 500 to 1000, closely packed together, these baskets are kept in cool places, and watered at least once a day.

The outer husk of the areca nut consisting of fibres and a pulpous matter, begins in a short time to ferment and to decay, the nut loses its bright orange colour, gets dark, and after its epidermis is rotten, it remains enveloped in a mass of closely woven fibres.

The fermentation accompanied with a considerable degree of heat, is deemed necessary to further germinations, which become conspicuous after about one month. In about two months, or later, the nut has shot forth a sprout, about an inch in length. This is the time to take the nuts out of the baskets and to plant them in a nursery, at a span's distance from each other, only half covered with earth. In the latter end of June or beginning of July, they are transplanted into the plantation in the spot where they are to remain for ever. They are then generally one foot high, and have shot two or three leaves in the nursery. They ought to be planted in rows at least seven cubits distant, this being about double of the diameter which the crown of this slender palm occupies, and which is necessary to leave ample room for ventilation. At the time of planting, care must be taken that the weather promises rain for a succession of several days. Should an interval in the monsoon take place, which is generally accompanied by a most powerful sun, the transplanted arecas die or suffer considerably. The arecas are the first of the perennial plantations to be taken care of, and they will be found very advantageous. The profits will not

be exorbitant (about four per cent per annum net gain from one tree), but the planter has the advantage of using the ground without much reference to the arecas, as they derive the greatest quantity of their nourishment from the air.

In the course of time, the palm rises with its roots above the ground, which latter are covered with mammillary varices, constantly removing and absorbing during the night their appropriate nourishment.

The palm does not yield fruit before the seventh year, and continues productive 25 or 30 years. After the first planting no further trouble is requisite than to loosen the ground once or twice a year, without the necessity of manuring or watering, provided the young plants have shade the first and second year.

The next to be done is the planting of coffee. Coffee is not yet introduced in sufficient quantity to have a certain number of seedlings available. Sprouting coffee seed ought to be procured from Calcutta from the coffee reared in Mocha. Young coffee plants can also be obtained from Penang at a very moderate price, and they arrive in good health, the passage being short.

Sprouting coffee must be laid out in a nursery, and the coffee trees transplanted when at least a foot high. No particular care is requisite, except that the roots are sunk vertically in the loosened soil, the slightest curve of the tap root of the coffee producing a sickly tree.

The coffee is to be planted between two rows of arecas, the lateral branches of the coffee extending far, and requiring room for expansion. Between each 1000 arecas 500 coffee trees can be planted without prejudice to the soil, as the coffee tree sinks its roots deep in the ground, and thence derives its nourishment. In the first instance the plantains afford shelter to the coffee, in after years the crowns of the arecas. Areca and coffee being planted, the attention is next to be directed towards the spice trees. It being however problematical whether clove trees will succeed, I confine my observations to nutmegs. Twenty paces apart from each other, holes are to be dug, at least four feet deep and $1\frac{1}{2}$ in diameter, and these are afterwards to be filled with the best procurable earth, such as humus, in preference to cow or buffalo dung mixed with earth,

at least a year old, or the best of all, the rotten husk of paddy mixed with earth, yielding a rich vegetable mould, which in the neighbourhood of Burmese towns or villages is always to be obtained.

The nutmeg tree has a tap root descending perpendicularly to a great depth, and which furnishes the chief nourishment. To permit this root an easy penetration downwards, feeding it in the best possible manner, is the reason why these holes are dug.

Considering the very great value of a nutmeg plantation, all the care and necessary outlay are trifling compared with the return. Nutmegs must be procured from Penang. In the Tenasserim Provinces they are scarcely obtainable, and only at an exorbitant price. When the holes are prepared the spice plants are to be transplanted from the nursery, but such only selected which have at least obtained the height of one foot. Each tree separately is to be surrounded with a frame-work of sticks and lateral shades, to be made from nipah palm leaves, the top only loosely covered with leaves, to permit the dew to penetrate, and in the dry season an earthen vessel is to be suspended over the young tree, perforated with holes through which constant moisture is made to drop upon the young plants. All these operations should, if possible, be performed in the first year, to save time.

A careful weeding, if paddy is not planted, is unremittingly necessary the first year, to eradicate all plants the seeds of which germinate very easily in the much loosened and rich soil. There are plants which are particular to newly cleared places belonging to the families of *Tiliaceæ* (*Triumfetta* the most common) *Malvaeæ*, *Gramineæ*, *Convolvulææ*, &c. &c. which are certain to be found even in the centre of a primitive forest, in cleared places where before, not a specimen of these species could be found for miles in the vicinity. Most of the roots of the burnt down trees shoot again, and must be twice or thrice destroyed before the roots decay.

In the second year, annuals can yet be reared in the intervals between the young trees, chiefly sesamum oil plants, cotton, and indigo; it would however be detrimental to take from the soil

more nourishment in the third year by again planting annuals. By this it will be perceived that a plantation laid out in this way does not yield a return before the seventh year; but that the revenue then increases in such a ratio, if laid out on a somewhat large scale, as to render the planter comfortable and independant after ten years.

The first and second year the settler will scarcely gain more than his livelihood by the value of the annuals; from the third to the seventh, the coffee alone will remunerate him; after the seventh year the arecas begin to bear; and after the eighth begin the crops of nutmegs.

A plantation of 50,000 arecas, 25,000 coffee, and 7,500 nutmeg trees would therefore yield as follows:—

Annuals.

1st and 2nd year,	Trifling.
3rd year coffee at an average of two annas net profit from one tree,	3,125
4th, 5th, and 6th year,	3,125
7th, 8th, and 9th year, arecas at 4 annas per tree. Coffee,	12,500 3,125
Total,	21,875
10th, and following 7 years, nutmegs at 10 rupees per tree,	32,500
Arecas,	12,500
	45,000

It must be observed that the calculation is taken from 3,250 instead of 7,500 nutmeg trees, which the colonist originally planted, because half these trees will probably be males, which are useless, and are to be cut down, except one for every twenty females, which is quite sufficient to impregnate them.

It is to be lamented that we know as yet no distinguishing mark to discern a male or female nutmeg tree before they blossom. It is therefore necessary to plant 3,250 young trees more, which after 8 years will again turn out half males and half females,

and so it ought to go on, till nothing but females, with a proportionate number of males, are obtained.

It will also be seen, that in the last calculation no notice is taken of the coffee trees.

When however the nutmeg trees grow larger, it will be advisable to cut down the coffee trees, to leave room for the expansion of the first, much more so as the return from coffee is trifling compared with that of nutmegs.

The same is to be observed of arecas, which after twenty-five years begin gradually to produce less; they ought also to be destroyed, to leave nothing but nutmegs, which continue to yield annually more.

Nutmeg trees are said to grow eighty years, and to attain a very large size; we have however no proofs as yet that they will be in these latitudes as lasting as they are in their mother country.

The return of nutmeg plantations increases annually, and in after years is much higher than ten rupees per tree. There are trees in Penang, which yield annually from 30 to 40 dollars, though not yet full grown. They bear almost without intermission throughout the year.

It would be advisable to use the slender stems of the dead arecas for the purpose of training upon them the pepper vine; it is however rather probable, that a planter who gets such an ample return from his nutmeg plantation will not take the trouble of beginning a new mode of cultivation with pepper, which after all does not last more than three or four years.

This now detailed method of cultivation seems the most promising to be followed up in the southern parts of Tenasserim by European settlers, insuring the most solid and ample return of the outlay of the capital, surpassing by far the most ample revenue the sugar plantations in the West Indies ever yielded. Spice is a new branch of tropical agriculture, or rather horticulture, sprung up only in the course of this century; formerly the Dutch government monopolized it exclusively. Penang is hitherto the only British colony which has introduced it, and which begins to astonish the world with the immense profits the owners reap from it. It must however be considered,

that only men of some capital are able to begin such plantations, as they must be able to wait at least seven years before they begin to see the profits of their outlay and industry. Formerly nothing was introduced, and nothing cultivated in the provinces, that did not spontaneously occur, except some fruit trees and some of the most common articles of tropical agriculture.

Of American productions, tobacco, pine-apples, guavas, and anotta (*bixa orellana*) are universally diffused. The durian tree which forms the greatest delicacy among the Burmese, was introduced from the Malay countries, after this came the mangosteen from the same quarter. Though arecas are every where planted in the provinces, they are not extensively planted; and the climate above the 15th degree of latitude seems no more congenial to them. In Mergui Province, since the British occupation, plantations on a large scale, even as much as 10,000 trees, have been laid out by the Burmese, and are augmenting annually.

Mangosteens are a later introduction, and are attended to by the Burmese with great care in Mergui province. Scarcely one-twentieth part of the trees planted are yet bearing.

The Burmese would certainly also plant nutmegs and cloves if they could but procure them. Government would therefore confer a great boon on the natives, by establishing in the southern parts a nursery of productions from the Malay and other countries, and divide them gratis to a deserving people. A kind of practical botanical establishment, on a small scale, would be highly useful.

In this should also be cultivated many of the wild growing trees, deteriorated in their jungly state, gradually to be domesticated by cultivation, and then exported to other parts, or laid out in experimental plantations. Such are the various kinds of caouchouc yielding trees, the wild gamboge, the sandal-wood trees, the sassafras, the black varnish, the cajeput-oil tree, &c. &c.

Many plants from the Malay countries when first introduced into Tenasserim, (considering this, as an intermediate stage), could be from hence transplanted to Bengal and Upper India, as it has been generally observed that a gradual ac-

climation is highly advantageous to the introduction of plants of different latitudes. The establishment of government spice nurseries, would be but following the Dutch system now introduced into Java.

The government monopoly there has been discontinued, and the private establishment of spice plantations encouraged; the government not only promising to supply every person with all plants required, gratis, but also to give instructions and directions how to proceed to ensure success. How much government would gain by such a process, shewing at the same time that the natives are not averse to introduce new modes of cultivation, can easily be illustrated.

Areca plantations are but a new branch of cultivation in the southern parts of Tenasserim. Ten years ago not more than 60,000 trees altogether were planted, the number rose in 1837 to 40,000 bearing trees, and 80,000 newly planted. In the year 1839 about 30,000 more were found. The customary tax due to government upon all produce is 15 per cent.

Suppose that instead of 150,000 areca palms, so many nutmegs were planted, which when bearing yield from 10 to 30 Rs. a tree, each tree taken at 15 Rs. average, the amount of revenue, the government levy, according to the established rule, would be 150,000 Rs. annually from the spice bearing trees alone. Of the necessity of planting out teak forests, I have spoken in my former reports. Without regular new plantations, the teak forests in Tenasserim will soon be exhausted.

One of the greatest riches of the country is derived from its teak forests. Except the teak no other timber is used; a small number of junks annually built by Chinese and other small Burmese craft constructed in Tavoy and Mergui from thingan (*hopea odorata*) excepted.

The researches carried on this year in the southern parts of the provinces, and amongst the islands, have shewn that this part of the country also is an uninterrupted forest, overgrown with almost the same species of timber which occur in the north. The greatest part of the timber trees valuable for ship-building belong to the *Dipterocarææ*, and this family has more representatives in Tenasserim than any where else; the *Hopeas*,

Vaticas, and *Shoreas*, are the most valuable. The *Dipterocareæ* though attaining an enormous size, furnishes an inferior wood.

All these trees, when full grown, are from 70 to 120 feet in height, rising with a straight trunk 40 or 60 feet high, and have, before they throw out any branches, a circumference from 10 to 30 feet.

Teak having been hitherto procurable, and prejudices being entertained against other species of timber, nobody has as yet endeavoured to turn the immense forests of the provinces into practical use.

So greatly is the timber neglected, that in all Tenasserim not one saw mill is as yet established, and strange to say, planks for house building are transported from Penang. To engage in timber with a prospect of success, would however require a considerable outlay of capital. Either a timber trade should be kept solely in view, or ship-building united with it. Ship-building has started up in Maulmain, is increasing, and is the only branch of enterprise in Tenasserim which occupies Europeans; it is however yet in its infancy, and capable of great extension.

If we except the teak, no other timber trade is carried on. The daily increasing demand for timber in Europe, Bengal, Madras, Mauritius, Cape of Good Hope, &c. however, will not permit the forests of this country to remain long unused. A great advantage towards rendering these forests useful, will be found in the great number of rivers and rivulets whose banks are covered with forest trees, and which will afford great facilities of transport.

Not only the inland parts, but numerous islands of the archipelago of Mergui are covered close to the sea-beach with forests, and frequently it will but be necessary to fell the tree, so as to make it fall into the sea, or to drag it only a few paces to the water's edge.

The establishment of saw mills moved by water, will present great difficulties; the sudden rise during the monsoon is dangerous to the strongest dikes, and it would be less profitable to erect saw mills at a distance from the sea port.

Saw mills propelled by steam at the mouths of the larger rivers, seem to promise the best. The felled trees bound

together in rafts could be easily floated down, and by way of the sea, the forest trees from several rivers could be collected at one establishment.

Tin.—In the preceding reports I had the opportunity of speaking about the tin mine to the east of Tavoy, and of the tin found near Mergui. This year having examined the country to the south of Mergui, it was found that the country to the north of the Packchan river is the richest in tin ores of all the districts in Tenasserim. The range of mountains in which the tin ore is found, is a continuation (only divided by the Packchan river) of the Siamese tin territory of Rinowng. The tin is found in the debris of primitive rocks, like in all other parts of Tenasserim, but the grains or crystals are much larger (sometimes of the size of a pigeon's egg) and the soil in which they are buried, yields 8 to 10 feet of tin; while at Tavoy the utmost is 7 feet. There is also tin at Domel Island in crystals, still included in the granitic matrix, and likewise on the banks of the Boukpeen rivulet in its higher part. In fact tin is of a very common occurrence in the southern parts of Tenasserim, and probably its richest deposits are yet unknown.

Persons of capital desirous of engaging in the working of tin, cannot select a better locality than in the southernmost parts of Mergui province. Besides being the richest, almost all land transport is avoided, by colonists establishing themselves on one of the smaller rivers falling into the Packchan.

They would however be obliged to provide themselves with every thing from a distance, for the country is entirely uninhabited, and the labourers must be brought thither from other parts.

Were a village under English protection established somewhere near the Packchan, there is no doubt that a number of Siamese fugitives would settle in the neighbourhood. They have expressed their desire to do so, if hopes of being protected were held out to them. If we consider the value of tin, it seems probable that this product will be one of the first which will attract the attention of Europeans, when it is once known that tin, as it is now ascertained, does really exist in quantities which promise amply to remunerate.

Iron.—All parts of Tenasserim are rich in iron. The localities and species of iron found on the main land, I have described in my former reports, and have only to add, that iron occurs equally upon the islands of the Mergui archipelago.

There have been found by me this year, four great deposits or beds of iron; the first about three hours from Mergui, at Maoin, and probably a continuation of it near Pereghium; the second not far from the entrance of the Lennya river, at an island called Kala-khiung by the Burmese; the third (the richest) on two islands (no name) to the west of Sir John Malcolm's island; the fourth on White Pigeon's Island, to the north of the Packchan embouchure. The ores if smelted, would furnish from 40 to 60 per cent of raw iron. The iron of Tavoy remains however the best with reference to per centage (74 to 80 or more) quality; and the preference should therefore be recommended to those who may be inclined to establish iron foundries.

It is to be hoped that such a valuable article, to be had under circumstances where fuel is but a matter of trifling consideration, will attract the attention of enterprising Europeans with capital.

To the mineral articles of the provinces must be added copper, discovered this year in two localities. The first in the NE. part of the great Lampi or Sullivan's Island, found in veins of quartz, running through transition clay slate, the second in the island of Calla-gkiauk, near Mergui, in a quarry running through gneiss.

Both have been obtained, but in small quantities; the prosecution of researches carried on by mining was not intended, but the bare indication of the occurrence of copper will be found sufficient to those who are desirous of turning their attention to this valuable mineral.

Before the invention of the steam engine, and before this invention was brought into universal application as a substitute for human labour for achieving works previously unknown, or thought impracticable, coal was nothing but a cheaper fuel than wood, and only of advantage to countries destitute of forests. In those abounding with timber, coal was useless.

In the same light the discovery of coal would be considered in Tenasserim. The country densely grown with the finest forest (at Mergui 100 billets of wood 9 feet 6 to 10 inches in circumference, are to be got for 9 Rs.) the population extremely scanty, in a primitive state, the country without manufactures and without commerce, the discovery of coal is therefore for the present of no use to the country.

Coal however being indispensable for steam purposes, the discovery of coal becomes highly important to the country indirectly, and to the whole of India directly.

For steamers navigating the coast, and going from Maulmain to Rangoon, Tavoy, and Mergui, coal is no great benefit.

Not above a four days voyage in a steamer can be performed with wood; an eight days trip from Maulmain to Calcutta is impracticable without coal, and the millions of timber trees in Tenasserim could not have contributed any thing to the accomplishment of a steam communication between the different parts of India.

The accomplishment of the Comprehensive Steam System between the different parts of India and Europe, will in a short time render coal in India a matter of first importance, and Mergui coal, of all hitherto known localities of coal deposits in India, will be the first.

The peculiar advantages with reference to quality, quantity, and locality, have been pointed out in my previous reports; it is only necessary to add, that the discovery of a new deposit, almost on the banks of the great Tenasserim river, not requiring land carriage (except a distance of 1000 yards) will cause a considerable diminution in the cost of the article, and will cause still larger quantities to be brought to light than previously would have been perhaps the case.

When Mergui coal is brought into general use, it will exercise a great influence over the other coal fields in India.

The Burdwan coal supply will be limited to the use of steamers on the Ganges and Burhampooter, and in consequence, the prices of coal used in inland navigation will rise to make up for the defect caused by the discontinuance of exportation.

The Palamow, and Cherra-Poongi coal-fields will either be given up entirely, or if they can compete with the Burdwan coal in cheapness, the latter will suffer still more, the quality of the former being superior, and the demand for coal for the river navigation in Hindoostan as yet so limited, that one of these localities can supply all the wants.

The importation of coal from Europe will probably cease entirely in time, for it would be very strange indeed, and only the effect of very bad management, if coal-fields well situated, with a material of a superior quality in the hands of one and the same nation, and many thousands of miles nearer to the place of consumption, should not render India altogether independent of Europe.

The first expense of the opening of the Mergui mines will be considerable, and the prices in the beginning high; either the Burmese must be employed, or a population introduced (Chinese suiting the best). In both cases the wages will be high—Burmese, independent in their character, and provided easily with all the wants of life, and induced only to work for high wages; and Chinese to be introduced into a new country, must in the beginning also be enticed by the prospect of higher wages than they can get elsewhere.

The expense of machinery and the setting it up, will be greater than in any part of India; vessels arriving empty will only carry coal for higher freight, and counting only to be remunerated by the return cargo.

These are the difficulties which will throw themselves in the way the first years, but gradually the coal will become cheaper.

Coal could be turned advantageously into use, by working the mines of iron in the neighbourhood of Mergui with coal; the nearest one is but a few hours distant. Mergui will undoubtedly become a considerable place; colonists ought to be advised to settle in the neighbourhood, and men of capital to resort there in preference.

1. It being that part of the country which possesses the coal mines.

2. It being peculiarly adapted for perennial plantations, and alone fit for the introduction of spices.

3. It being well situated for commercial intercourse overland with Bankouk, and in general with the population scattered along the gulf of Siam, being placed in the narrowest part of the Malay peninsula.

Besides the rich mines of the country, there is also antimony, silver, and gold, in the country, which are, however, to men of capital of minor importance.

Antimony will perhaps be worked, if Maulmain continues to be a flourishing settlement, on account of its neighbourhood to that place. The silver mine to the north of Maulmain is too engirded by the mountains, and its value as yet too problematical to recommend it to private enterprise; and gold is to be found in too small quantities in the rivers to merit attention.

The fisheries are not unimportant, as may be well expected in a country which possesses 600 miles of sea-coast; but they are the most considerable amongst the islands of the archipelago of Mergui, where the young brood find an appropriate shelter between the inner islands. In the month of February and March, the sea is covered for miles with a green mucilaginous mass, which envelopes myriads of spawn; the variety of fish is great, and Mergui is famous for the most delicate species.

The fisheries are farmed out to the natives; Malays and Chinese share in this occupation, but it is carried on on a very diminutive scale.

During some periods of the year the fishermen retire to certain spots on the uninhabited islands to the south of Mergui. It is however, done very imperfectly; the fish is spread over a framework of mangrove trees, and permitted to dry in the sun, being daily trodden with the feet twice. No salt is ever employed in the curing of fish. Certain kinds of fish are bought in the market smoked.

They have small and imperfect nets, these being sufficient to get the quantity desired near the towns and villages; fish are caught in stakes.

Some little fish oil is also collected. It seems that a fishery carried on by Europeans, on a similar scale with that of Newfoundland, would be much more remunerating, as a ready market here and in India will always be found, cured fish forming an univer-

sally relished condiment and ingredient of the native dishes. It must be remarked that whales are not uncommon in the Mergui archipelago. There are pearl banks to the south of Mergui; two were worked once at the time of the Siamese occupation; one situated on the east side of Sullivan's Island, the other on the east side of *Collie* (?) Island, stretching across to the main. This occupation is said to have formed a considerable source of revenue to the government.

Once an attempt was made by Mr. Maingy, the commissioner, to revive the pearl fishery, but it was given up for want of divers accustomed to dive to great depths, the best pearl shell-fish being found at the depth of ten or twelve fathoms. This source of revenue lies entirely dormant at present. The natives are ignorant of the necessary proceedings.

Sometimes pearls of a middling quality are found by the Seelongs in the indicated localities at low water, and these bartered to the Chinese who traffic with the remnants of that race. How far it would be remunerating to men of capital to engage in this pursuit, can of course not be said at present, as even the extent of the pearl banks is not known, as well as the quantity obtainable from shell-fish attached to rocks at a greater depth.

The edible birds' nest caves form a not inconsiderable source of revenue to the provinces in the southern parts of the Tenasserim Provinces.

They are at present farmed out to Chinese and Malays; those in the Mergui archipelago are again farmed out to other Malays, who come from Penang during the dry season to watch the caves, and to build and repair the frameworks necessary for collecting the birds' nests attached in the sombre caves, on the most lofty, dangerous, and inaccessible parts. This branch of occupation it seems does not suit Europeans, and will probably remain for ever in the hands of Chinese and Malays. Irregularities will occur as long as the localities which the swallows frequent are not ascertained, which is the more difficult as these birds change their abodes; so that many caves (such for instance in the Elephant rocks to the SE. of Domel) are now almost entirely deserted.

To these productions of the sea, which enter into the article of commerce, must be added tortoise shells, mother o'pearl shells, sea-slugs, and amber, which are found among the islands of the Mergui archipelago, and which are entirely neglected, or triflingly collected by the wandering Seelongs.

Commerce.—For commercial men (Europeans) the Tenasserim provinces are a poor resort. In a new country it requires a long time before a regular commercial intercourse can be established, whereas in Tenasserim reciprocity is wanted.

The Burmese have been too long separated from India, and much more from Europe; they know little of the commodities of either country, and they know not how to use them. What they want for their own comforts, and do not produce themselves, is all found within the sphere of their own country; what Tenasserim does not produce of their luxuries, superfluities, or commodities, Pegu and Ava do. Very few articles of European or Indian produce have found their way to Burmah. These few articles are limited to cotton piece goods of an inferior quality, some broad cloth, iron, tobacco, and opium; and the majority still use their own home-spun cloths, and content themselves with inferior tobacco, while only a small portion of the community (chiefly the richer class) indulge in smoking opium. All the rest of the commodities imported is for the use of foreigners in the provinces, and these being comparatively few, their wants are soon satisfied.

The generality of the Burmese people have no inducement to become acquainted with foreign commodities, they are too widely different in their habits, customs, and wants, from Europeans, and they possess as yet no ambition to procure the new luxuries; they have besides no reason to exchange their surplus for new articles. Yet Burmah in general, and Tenasserim considered as a part of it, might be a country of commercial importance, possessing many articles intrinsically of value, which would be appreciated in European markets, and which require only to be collected, being partly the spontaneous productions of nature, which are now entirely unused, and will remain so as long as there exists no mutual commerce. Even supposing that the natives could be induced to collect these articles at a reason-

able price, vessels that would arrive to carry away that produce have nothing to bring, and consequently their profits would be doubtful. Under such circumstances, trade will only be confined to Asiatics, who are much better fitted to provide the natives with the little commodities they are in want of from foreign parts.

Should the provinces become a resort of civilized men, whose wants are more numerous, and with whom commodities are become by force of habit necessities, then commerce will spring up, and the resources of the country, the spontaneous productions of nature, as well as the produce of the cultivated soil, will be called forth in a short time.

The Tenasserim Provinces are well situated to become a commercial emporium; they could be made the intermediate link, uniting the Chinese world with India and Europe.

An overland communication between China and the British Indian possessions has long time been deemed very desirable. From two points there is a possibility of accomplishing it, either by way of Assam, or by way of Tenasserim. Though Assam is much nearer to the Chinese dependencies, yet the nature of the country to be traversed seems to throw such difficulties in the way, that it is not thought of at present. Maulmain is much more distant from China Proper, but there are, as far as is known, no great natural difficulties to overcome, to establish a commercial road at least with Chinese Yunan, the southernmost province. The Chinese themselves seem to be desirous that it were accomplished, and the fact that a Chinese caravan was actually on the road to Maulmain, corroborates this opinion.

The difficulties are only of a political nature, and are to be sought for in the jealousy of the Burmese and Siamese governments, and the apprehensions of the Shan states, to the north of Amherst Province. Should the relations with Burmah be placed on a solid footing, there is no doubt that an overland trade with China and the British Indian possessions would spring up. Chinese caravans come annually to Burmah, and within a short distance of the northern parts of Tenasserim.

The articles most in demand, would be European and Indian

goods of little bulk, such as opium, piece goods, cotton yarn, and bullion, and they could be sent into the interior parts of China in this way more direct than at present, for all articles imported by British vessels must be from the sea ports to the distant inland provinces of China; and though it seems at first sight to be a very long journey from Maulmain to China, yet it is a shorter one for the western provinces of Yunan, Mungfan Kahang, and Amdoa, than through Canton; and several of these, which are unable at present to get these goods at all, could be provided with them in this way.

If the Chinese import from Burmah now almost nothing but raw cotton of an inferior quality, which is very bulky, how much more would they be inclined to transport the above mentioned articles.

The Russians set an example in their trade with China; their communication embraces the longest known commercial overland road—from Astracan over great part of Siberia, to Kaichta, from whence they have to pass the Duary Mongolian steppes, before they reach the great wall, the entrance to China Proper.

The distance from Maulmain to the southern parts of China is trifling, compared with the Russo-Chinese road of commerce. The southern parts of Tenasserim are well situated to carry on a commerce with Bankouk. The British intercourse with Siam has been greatly neglected, which is the more to be wondered at, as that country abounds in most precious articles, and its ruler seems to patronize commerce. The treaty concluded with Siam does not preclude British Indian subjects from trading overland; there has been however hitherto no inducement to do so. Mergui would be the place to carry on a trade across the isthmus, which in a straight line does not there exceed eighty miles, thirty at least of which, as far as is known, can be accomplished by water on this side. The country does not present any great difficulties, and a road formerly existed from Tenasserim across the country, which Alompra followed with his army, marching to besiege Bankouk. Should such a road be opened again, it would call into operation the coal mines discovered last year—which are situated on this road, not far from the Siamese frontier, which for the present

remains unused—as the late discovered locality of coal presents far greater facilities for transport.

Should the Tenasserim Provinces advance in prosperity, it is very probable that the gulf of Siam will be united with the bay of Bengal by a railroad. To form a canal through the isthmus of Kraw, as has been once proposed, would rather appear a chimerical undertaking. I had opportunities of examining that portion of the country this year, navigating the Packchan river as far as it is navigable for vessels of some burthen, and the natives informed me that an interruption exists in the range of mountains, which runs through the peninsula, and that another navigable river (Telim-foung) is met with at a distance of six hours march on the other side; but whatever localities might be chosen to traverse the peninsula, a railroad in a tract of country abounding with timber, iron, and coal, would at any rate be preferable to a canal.

For the present such an undertaking must remain a theoretic scheme; it would only be recommendable in the event of Tenasserim being occupied by European settlers; the relations with Siam, as a country full of resources, better understood; and the commercial intercourse with China not only re-established, but also become more vigorous, and still more extensive. In the latter case a speedy communication between China, India, and Europe, and across the peninsula, through Tenasserim, would be very beneficial.

Recapitulation.—Recapitulating what has been said in the foregoing pages, we are led to the following conclusions.

1. That Tenasserim is particularly well situated for an European colony, on account of the quantity of good land unoccupied, the variety of tropical productions which can be raised, the salubrity of the climate, and the facility of communication, possessing a large extent of sea-coast with numerous navigable-rivers.

2. That the natives will be no impediment in any way to European settlers, as they are in many respects in Hindoostan.

3. That Tenasserim therefore ought, in preference to any other part of British India, to be chosen as a resort for Europeans who are desirous of occupying the land as agricultural settlers.

4. That it possesses, besides, great inducements to men of capital to employ their money productively here; the timber forests, the tin, iron, and coal mines, besides other spontaneous productions of nature, being inexhaustible riches of value.

5. That mercantile speculations cannot be remunerating at present, there being scarcely any demand for foreign produce.

6. That the situation of the country is such, as to point it out as the commercial high road in the north between China; and in the south, between Siam and British India.

NOTE.—The MS. from which this valuable report was printed abounds with copyist's errors, on which it has been sometimes impossible to venture even a conjectural correction.



Memoir on the Climate, Soil, Produce, and Husbandry of Afghanistan and the neighbouring Countries.—By Lieut. IRWIN.¹

PART IV. (*Continued.*)

Toree.

209. The climate is here milder. The chief products are rice and mash. The lands are irrigated, the houses flat-roofed; timber, fuel, and fodder are easily had. The chief live stock is goats, and next, cows and buffaloes. The carriage is by mules, and the natives carry rice and mash to Cabul from their own valley, as also salt from the eastward. The cultivation is considerable, and the villages Zeran and Koorman are long ones.

Upper Bungush.

210. This country seems to correspond in most circumstances to that of Toree. The chief town is Honga, which has 400 houses. The country is strong, and is under its own chief, whom the king seldom displaces. It yields good honey, and is well wooded and watered. Rice is exported to Cabul, generally by the road of Ghorbund. The vallies are well inhabited. But little use is made of tents.

¹ Continued from p. 65, vol. ix.